REMARKS/ARGUMENTS

Claims 1-3 and 5-11 are pending herein. Claims 1 and 5 have been amended hereby as supported by page 3, line 31--page 4, line 3 of the substitute specification filed on September 11, 2003, for example. New dependent claims 6-11 have been added hereby as supported by page 3, line 24--page 4, line 3 and page 6, lines 4-11 of the substitute specification and Figs. 1 and 5, for example. Applicants respectfully submit that no new matter has been added.

1. Claims 1-3 and 5 were rejected under §103(a) over Rhodes in view of Charles. Applicants respectfully traverse this rejection. To the extent that this rejection might also be applied against new claims 6-11, it is respectfully traversed.

Independent claim 1 recites a discharge vessel or chamber for a high-intensity discharge lamp comprising a central body made of an alumina material or an alumina-based ceramic material and having a discharge space provided therein. Two capillaries are provided closing off respective end openings of the central body, and the capillaries are also made of an alumina material or an alumina-based ceramic material. An electrode is positioned within each respective one of the capillaries. The average diameter of alumina grains in the central body is greater than the average diameter of alumina grains in the capillaries, and the average diameter of alumina grains in the capillaries is in a range of 10 to 25 μm.

Independent claim 5 recites a discharge vessel or chamber for a high-intensity discharge lamp including the features recited in claim 1, but further recites that the central body and capillaries are simultaneously sintered.

Applicants respectfully submit that Rhodes does not disclose that the average grain size in the polycrystalline alumina (PCA) arc tube is, or should be, greater than the average alumina grain size in the sealing members 13, 13', which the PTO asserted correspond to the claimed capillaries (see Rhodes, Fig. 2, for example). To the contrary, Applicants respectfully submit that Rhodes actually discloses that the average grain size of the alumina grains in the sealing members is larger than that of the PCA arc tube (see Rhodes, Col. 9, lines 54-55).

More specifically, Rhodes discloses that, in one example, the average grain size of alumina grains in the sealing members was 39 μm, compared to 29 μm for the PCA arc tube (see Rhodes, Col. 9, lines 55-56). Table 3 in Col. 10 of Rhodes further shows sealing member compositions having average grain sizes ranging from 11 μm to 31.1 μm, but also clearly shows that the strength of these compositions does not necessarily increase as the average grain size of the alumina grains in the sealing member compositions decreases. Rhodes also teaches that large grains are believed to be the origin of strength-limiting flaws, and in order to decrease the potential development of such strength-limiting flaws, the microstructure (i.e., average grain size) of the sealing members 13, 13' should be nearly equal in strength to that of the PCA arc tube (see Rhodes, Col. 9, lines 57-63). In view of this, Applicants respectfully submit that Rhodes clearly suggests that the average grain size of the PCA body should be the same as, but not larger than, that of the sealing members allegedly corresponding to the claimed capillaries.

Further, Applicants respectfully submit that Charles cannot overcome the above-discussed deficiency of Rhodes. That is, Applicants respectfully submit that Charles discloses sintered PCA having an average grain size ranging from 5 to 100 μm, and teaches that an average grain size of less than 15 μm results in poor optical properties (Col. 7, lines 57-61), whereas an average grain size exceeding 100 μm results in poor strength properties (Col. 7, lines 61-63). Charles further teaches that the PCA should thus have an average grain size in a range of 20-50 μm to maintain optical translucency and strength, and to be useful for applications such as arc tip enclosures (Col. 7, lines 63-67).

In view of the above, Applicants respectfully submit that even if one of ordinary skill in the art had applied the teaching of Charles to the sealing member and PCA body compositions in Rhodes, that skilled artisan would have been motivated to make both the sealing member and the PCA arc tube to have the same average grain size in view of Rhodes, which would be in a range of 20-50 μm in view of Charles. Since Rhodes already teaches this range, however, Applicants respectfully submit that

such a skilled artisan would not have had any need to apply this teaching of Charles to Rhodes at all.

For at least the foregoing reasons, Applicants respectfully submit that neither Rhodes nor Charles discloses, or even suggests, that the average grain size of alumina grains in the central body (arc tube) should be greater than the average grain size of alumina grains in the "capillaries," as recited in claims 1 and 5.

Claims 2 and 3, and new claims 6-8, depend either directly or indirectly from independent claim 1, and new claims 9-11 depend either directly or indirectly from independent claim 5. Applicants respectfully submit that since independent claims 1 and 5 define patentable subject matter over the applied references for the reasons explained above, dependent claims 2, 3 and 6-11 likewise define patentable subject matter over the applied references by virtue of their respective dependency from independent claims 1 and 5. Moreover, Applicants respectfully submit that the structural features of the discharge vessel recited in new claims 6-11 are simply not disclosed or suggested in the applied references.

For at least the foregoing reasons, Applicants respectfully submit that all claims pending herein define patentable subject matter over the applied references. Accordingly, Applicants respectfully request that the above rejection be reconsidered and withdrawn.

If the Examiner believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,

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Date

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